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Compatibility of Microbial Inoculants with Conventional Turfgrass Pesticides

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Abstract

This project was designed to examine the impact of pesticide applications on the efficacy of commercial microbial inoculants used to suppress turfgrass diseases. Our goal in this research was to document any positive or potentially negative combinations of biological disease control products with commonly-used fungicides, insecticides, and herbicides. Our studies were designed to first determine the in vitro toxicity of various herbicides, insecticides, and fungicides to selected turfgrass pathogens so that laboratory and field results could be properly interpreted. Next, we examined in laboratory studies, the impacts of high label rates of selected chemical pesticides on the efficacy of inoculants for control of *Pythium graminicola, Sclerotinia homoeocarpa*, and *Rhizoctonia solani* on creeping bentgrass. Finally we tested an expanded number of commercially available inoculants in field studies without conventional golf course management compared with inoculants used in conjunction with conventional golf course management practices. Results from the study revealed a number of important findings. First, and somewhat surprising, was the fact that a number of pesticides commonly used in golf turf management had significant toxicity to non-target pathogens. This is best exemplified by the activity of Daconil against *P. graminicola*, Trimec and Merit against *S. homoeocarpa*, and Subdue Maxx against *R. solani*. These findings complicate the interpretation of bioassay results and complicate interpretations of field results when such pesticides are used in combination with biological agents. Second, our results clearly showed that a number of pesticides used in combination with inoculants could dramatically affect their suppressive qualities toward various diseases. This is best illustrated by the impact of Bayleton and Proxol on the suppression of *P. graminicola* by *E. cloacae*. Finally, our results showed that some commercially available microbial inoculants were suppressive to Brown patch and Anthracnose diseases.

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